

Noise Reduction in Systems with an RF Tuner Front End

ABSTRACT

A switching amplifier system to reduce noise outside of the information signal, but still within the Audio Signal Bandwidth. The present invention is advantageous for reducing noise in low cost systems which contain sensitive RF front ends that include a switching amplifier and or a Switched Mode Power Supply (SMPS). These power-switching systems can produce high frequency interfering signals, which reduce the audio performance of sensitive RF front-ends including AM/FM/TV band tuner areas. In contrast to metal shielding and EMI filters use in prior art solutions, the present invention can be implemented at low cost in existing digital silicon processes. In the present invention, a filter is provided that minimizes the in-band audio noise by carefully filtering the audio signal based a predicted interference pattern. The predicted interference pattern is determined by examining the key contributors to the EMI spectrum generation, and their mapping into the tuner frequency selected. A filter function is then chosen that will remove much of the audio in-band noise, without degrading the information signal.